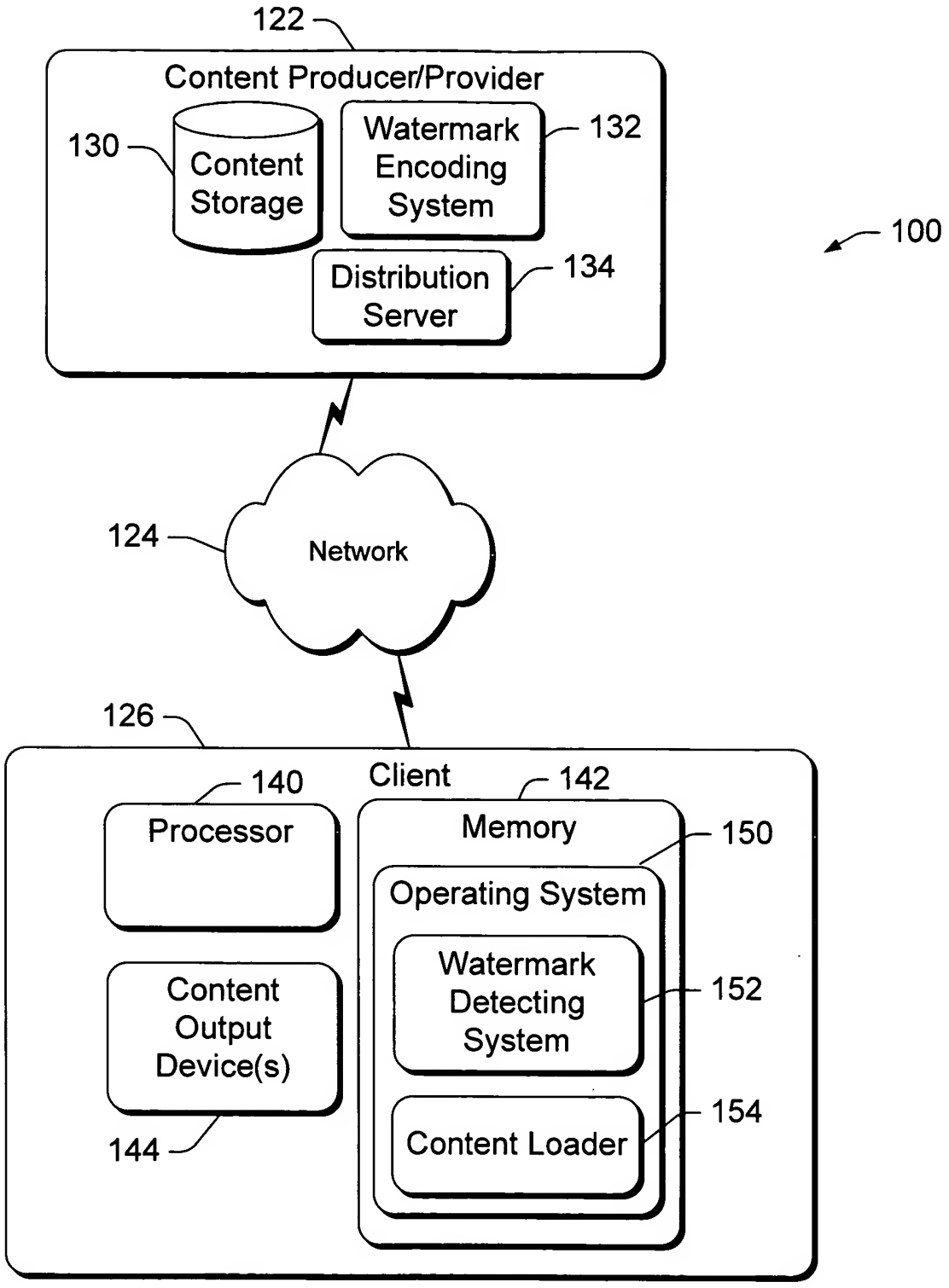
122
Content Producer/Provider
130
Content Storage
Watermark Encoding System
132
Distribution Server
134
100
124
Network
126
Client
140
Processor
142
Memory
150
Operating System
Watermark Detecting System
152
Content Output Device(s)
144
154
Content Loader

Fig. 1

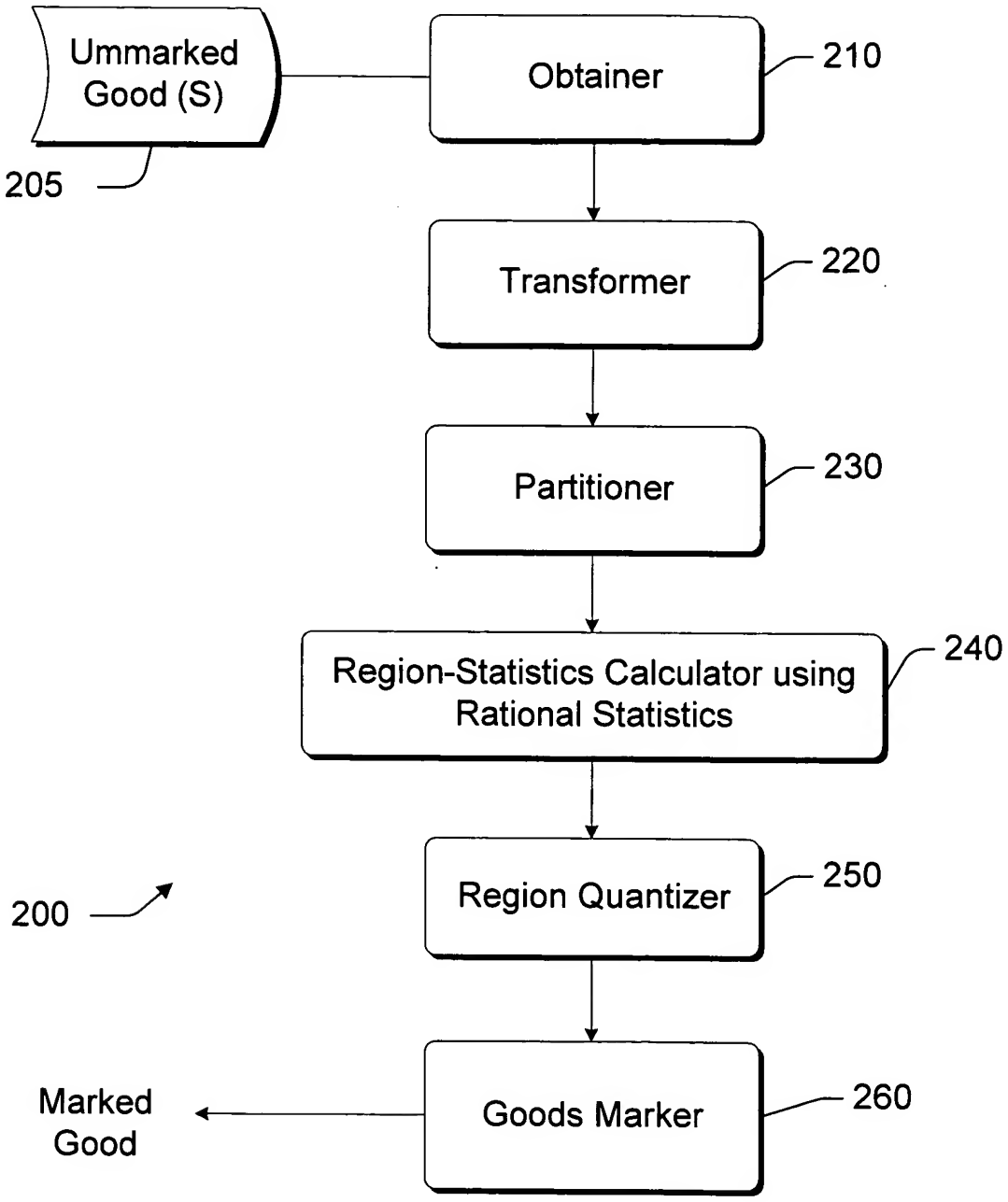
Ummarked Good (S)
205
Obtainer
210
Transformer
220
Partitioner
230
Region-Statistics Calculator using Rational Statistics
240
Region Quantizer
250
200
Goods Marker
260
Marked Good

Fig. 2

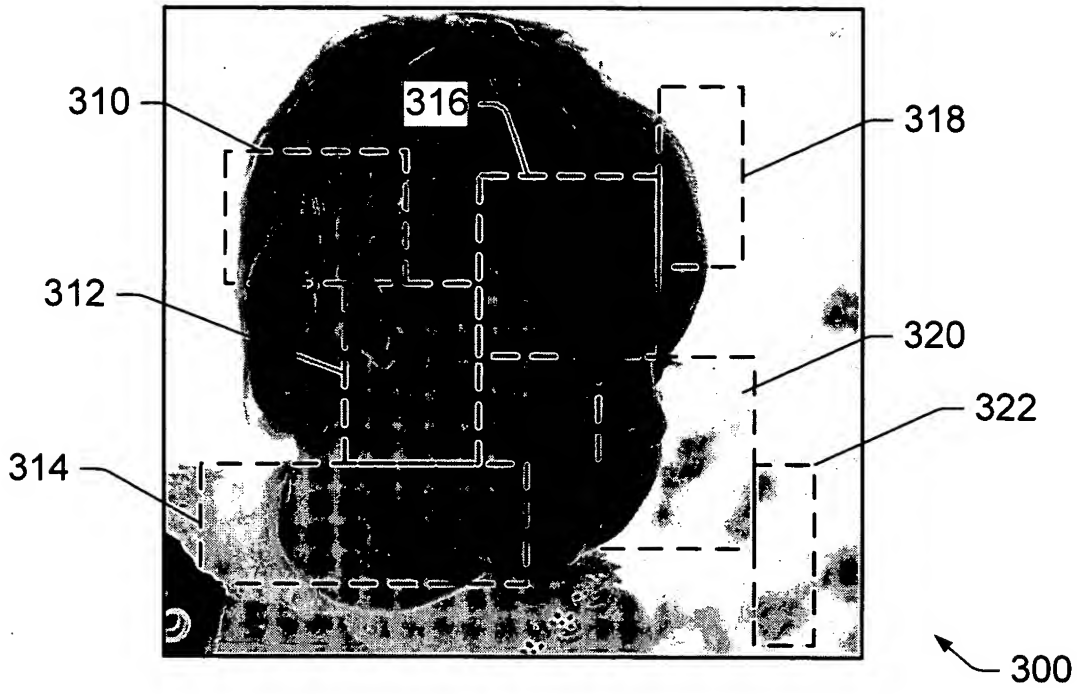
310
316
318
312
320
322
314
300

Fig. 3

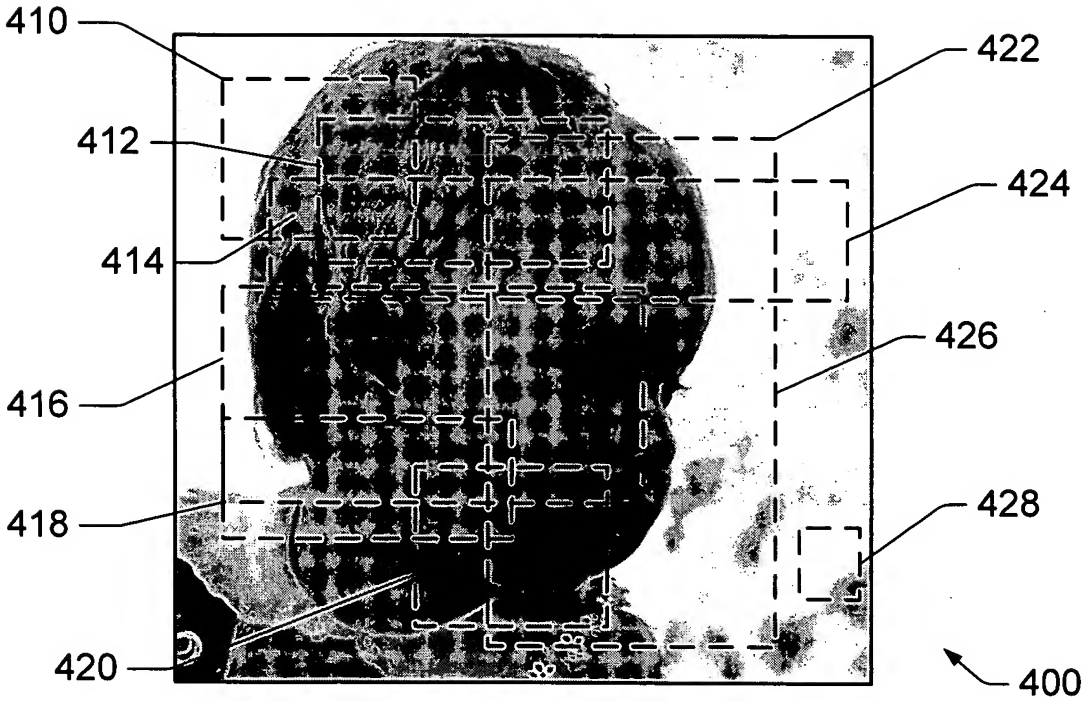
410
422
412
424
414
426
416
428
418
420
400

Fig. 4

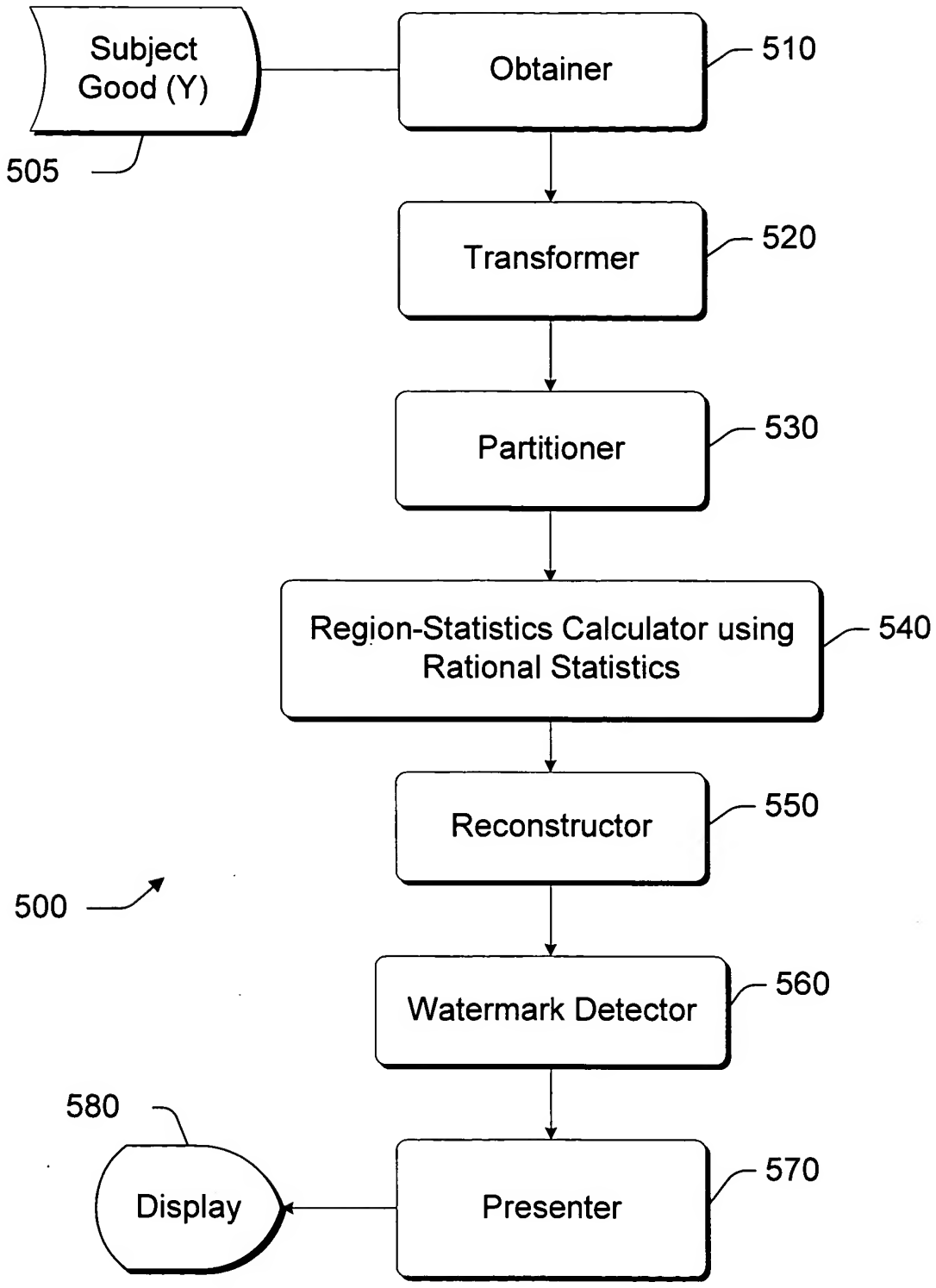
Subject Good (Y)
505
Obtainer
510
Transformer
520
Partitioner
530
Region-Statistics Calculator using Rational Statistics
540
Reconstructor
550
500
Watermark Detector
560
580
Display
Presenter
570

Fig. 5

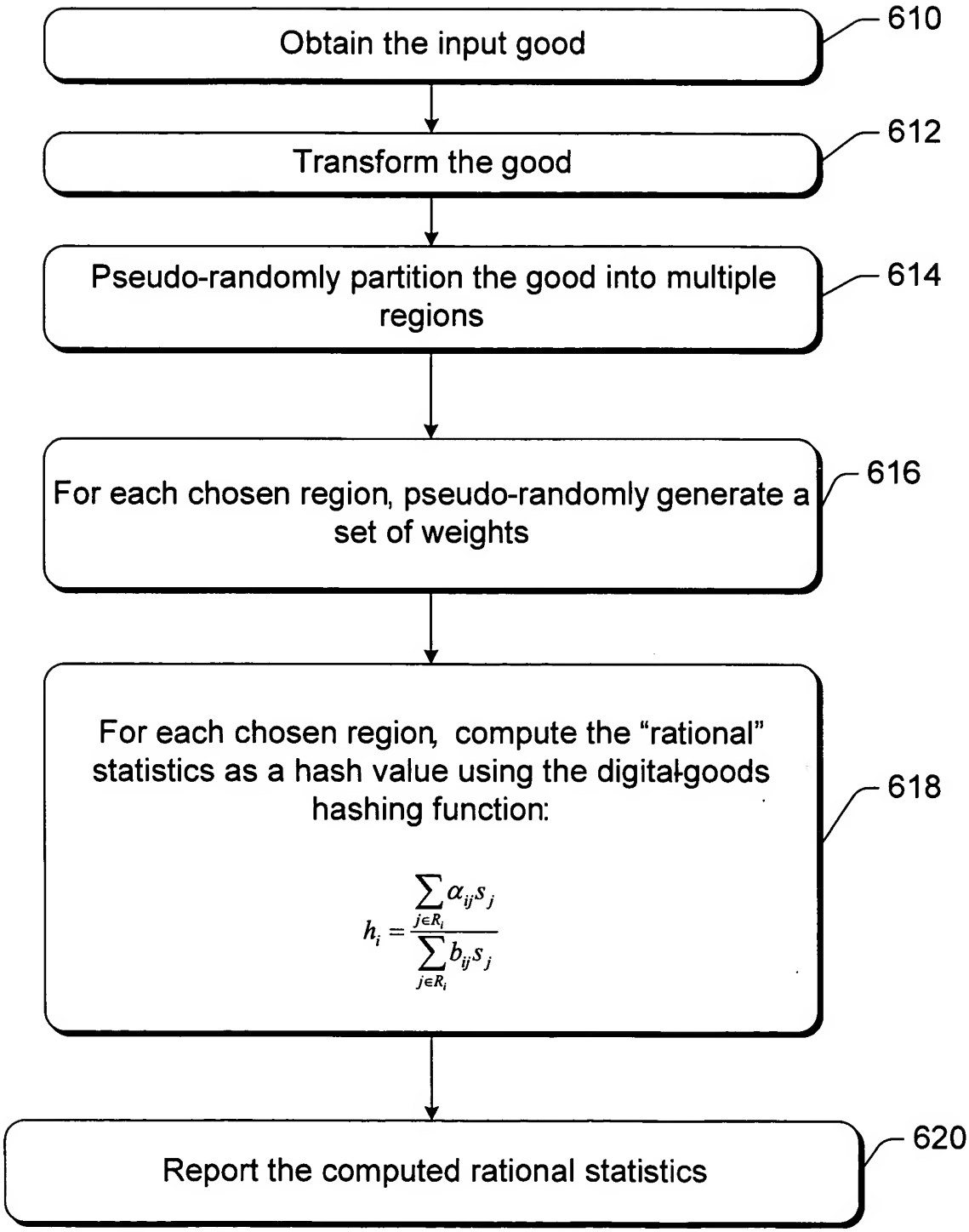
Obtain the input good
610
Transform the good
612
Pseudo-randomly partition the good into multiple regions
614
For each chosen region, pseudo-randomly generate a set of weights
616
For each chosen region, compute the "rational" statistics as a hash value using the digital-goods hashing function:
$h_i = \frac{\sum_{j \in R_i} \alpha_{ij} s_j}{\sum_{j \in R_i} b_{ij} s_j}$
618
Report the computed rational statistics
620

Fig. 6

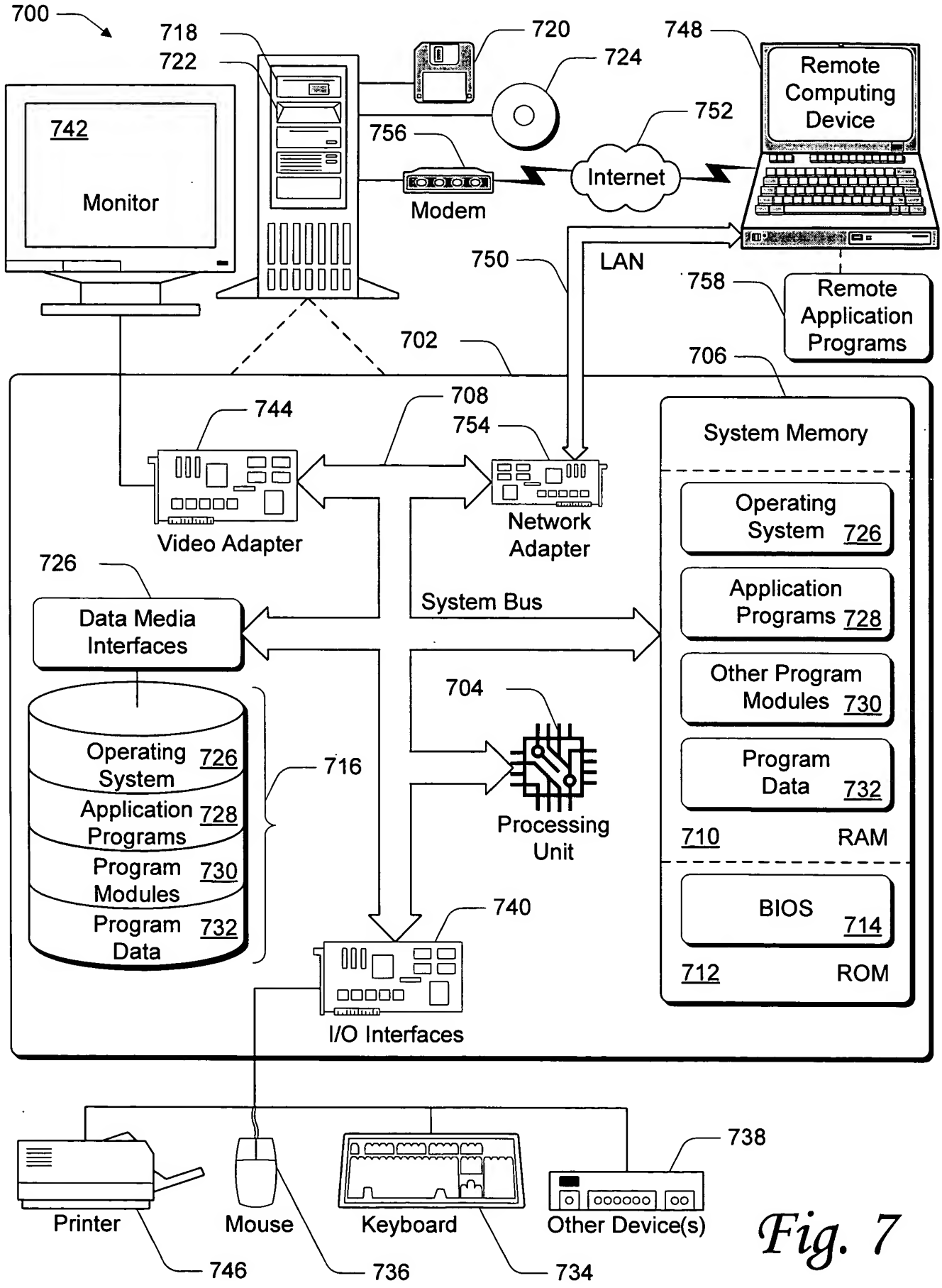
700
718
722
720
724
748
Remote Computing Device
742
Monitor
752
756
Internet
Modem
750
LAN
758
Remote Application Programs
702
706
744
708
754
System Memory
Video Adapter
Network Adapter
Operating System 726
726
Application Programs 728
Data Media Interfaces
System Bus
Other Program Modules 730
704
Program Data 732
716
Operating System 726
Application Programs 728
Program Modules 730
Program Data 732
Processing Unit
710
RAM
740
BIOS 714
712
ROM
I/O Interfaces
738
Printer
Mouse
Keyboard
Other Device(s)
746
736
734

Fig. 7